Cypress Semiconductor
Package Qualification Report

QTP# 044006 VERSION 1.0
November 2006

144-Ball Fine Pitch Ball Grid Array (FBGA)
(13 x 13 x 1.6mm)
Stacked Die
MSL3, 220C Solder Reflow
ASE-Taiwan

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PACKAGE QUALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date Comp
044006	144-Ball FBGA (13 x 13 x 1.6mm), Stacked Die, MSL3, 220C Reflow assembled at ASE-Taiwan	Mar 05

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BB144
Package Outline, Type, or Name:	144-Ball Fine Pitch Ball Grid Array (FBGA)
Mold Compound Name/Manufacturer:	KE-G2270
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	N/A
Substrate Material:	BT
Ball Composition / Diameter:	SnPb 63/37, 0.45mm
Die Backside Preparation Method/Metallization:	Backgrind to 6 mils
Die Separation Method:	Saw Singulate
Die Attach Supplier:	Ablestik and QMI
Die Attach Material:	2025D (Die Attach 1 and 3) and QMI536 (Die Attach 2)
Die Attach Method:	Epoxy
Bond Diagram Designation:	10-06132
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 1.0 mil
Thermal Resistance Theta JA °C/W:	18 °C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-41024
Name/Location of Assembly (prime) facility:	ASE-Taiwan
MSL Level	3
Reflow Profile	220C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-K, USA-SJC

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Acoustic Microscopy Test	Cypress Spec. 25-00104	P
Ball Shear	Cypress Spec. 24-00018	P
Bond Pull	Cypress Spec. 24-00002	P
Die Shear	Cypress Spec. 12-00215	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V Cypress Spec. 25-00020	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V JESD22, Method A114-B	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V MIL-STD-883, Method 3015.7	P
External Visual	Cypress Spec 25-00038	P
Internal Visual	Cypress Spec 25-00017	P
High Accelerated Saturation	130°C, 3.3V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, **220°C**+0, -5°C	P
High Temperature Storage	150C, no bias	P
Physical Dimension	Cypress Spec. 25-00031	P
Pressure Cooker	121C, 100%RH, 15 Psig Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, **220°C**+0, -5°C	P
Temperature Cycle	JEDEC22, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, **220°C**+0, -5°C	P
Thermal Shock	Cypress Spec. 25-00014	P
X-Ray	Cypress Spec 12-00292	P

Reliability Test Data

QTP #: 044006

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY7C0833AV (7C08333A)	4429608	*610452519*	TAIWAN-G	COMP	15	0	
STRESS: BOND PULL							
CY7C0832AV (7C08333A)	4429608	*610452044*	TAIWAN-G	COMP	10	0	
STRESS: BALL SHEAR							
CY7C0832AV (7C08333A)	4429608	*610452044*	TAIWAN-G	COMP	10	0	
STRESS: DIE SHEAR							
CY7C0832AV (7C08333A)	4429608	*610452044*	TAIWAN-G	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY7C0833AV (7C08333A)	4429608	*610452519*	TAIWAN-G	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-B, 2,200V							
CY7C0833AV (7C08333A)	4429608	*610452519*	TAIWAN-G	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, 2,200V							
CY7C0833AV (7C08333A)	4429608	*610452519*	TAIWAN-G	COMP	3	0	
STRESS: EXTERNAL VISUAL							
CY7C0832AV (7C08333A)	4429608	*610452044*	TAIWAN-G	COMP	15	0	
STRESS: INTERNAL VISUAL							
CY7C0832AV (7C08333A)	4429608	*610452044*	TAIWAN-G	COMP	5	0	
STRESS: PHYSICAL DIMENSIONS							
CY7C0832AV (7C08333A)	4429608	*610452044*	TAIWAN-G	COMP	5	0	
STRESS: X-RAY							
CY7C0832AV (7C08333A)	4429608	*610452044*	TAIWAN-G	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 3.3V), PRE COND 192 HR 30C/60%RH, MSL3							
CY7C0833AV (7C08333A)	4429608	*610452519*	TAIWAN-G	128	50	0	
STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C							
CY7C0833AV (7C08333A)	4429608	*610452519*	TAIWAN-G	500	46	0	
CY7C0833AV (7C08333A)	4429608	*610452519*	TAIWAN-G	1000	46	0	

Reliability Test Data

QTP #: 044006

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C0833AV (7C08333A)	4429608	*610452519*	TAIWAN-G	168	48	0	
STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3							
CY7C0833AV (7C08333A)	4429608	*610452519*	TAIWAN-G	300	48	0	
CY7C0833AV (7C08333A)	4429608	*610452519*	TAIWAN-G	500	48	0	
CY7C0833AV (7C08333A)	4429608	*610452519*	TAIWAN-G	1000	48	0	
CY7C0832AV (7C08323A)	4429608	*610452044*	TAIWAN-G	300	50	0	
CY7C0832AV (7C08323A)	4429608	*610452044*	TAIWAN-G	500	50	0	
CY7C0832AV (7C08323A)	4429608	*610452044*	TAIWAN-G	1000	50	0	
CY7C0832AV (7C08323A)	4429608	*610454901*	TAIWAN-G	300	50	0	
CY7C0832AV (7C08323A)	4429608	*610454901*	TAIWAN-G	500	49	0	
CY7C0832AV (7C08323A)	4429608	*610454901*	TAIWAN-G	1000	49	0	
STRESS: THERMAL SHOCK							
CY7C0832AV (7C08323A)	4429608	*610452044*	TAIWAN-G	100	50	0	
CY7C0832AV (7C08323A)	4429608	*610452044*	TAIWAN-G	200	50	0	